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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/840,075	04/24/2001	Jun Hoshii	206556US2	2179

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EXAMINER	
HUNTSINGER, PETER K	
ART UNIT	PAPER NUMBER
2624	

DATE MAILED: 12/08/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/840,075	HOSHII ET AL.	
	Examiner	Art Unit	
	Peter K. Huntsinger	2624	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *24 August 2005*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-34* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-34* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

DOUGLAS Q. TRAN
PRIMARY EXAMINER

Attachment(s)

1)☒ Notice of References Cited (PTO-892)
2)☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3)☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4)☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5)☐ Notice of Informal Patent Application (PTO-152)
6)☐ Other: _____.

DETAILED ACTION

Continued Examination Under 37 CFR 1.114

1. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 24 August 2005 has been entered.

Response to Amendment

2. The amendment filled on 24 August 2005 has been entered in full.

Response to Arguments

3. Applicant's arguments with respect to claim24 August 2005 have been considered but are moot in view of the new ground(s) of rejection.

Claim Rejections - 35 USC § 103

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

5. Claims 1, 3, 4, 7, 12, 14, 15, 18, 23, 25, 26, and 29 are rejected under 35 U.S.C. 103(a) as being unpatentable over Sakaida U.S. Patent No. 6,392,765 and Westerink et al. U.S. Patent 5,420,971.

Referring to claims 1, 12, and 23, Sakaida discloses a medium whereon an image data interpolation program has been recorded to implement pixel interpolation to image data of an image represented in multi-tone dot matrix pixels on a computer (col. 8, lines 1-9), said medium with the image data interpolation program recorded thereon, after being set ready for use on a computer, making the computer perform: a function of image data acquisition that acquires said image data (Sorg of Fig. 5, col. 21, lines 27-31), a first interpolation processing function that interpolates pixels to said image data without decreasing the degree of tone value difference between the existing pixels (cubic spline interpolating operation means 31 of Fig. 5, col. 21, lines 27-31); a second interpolation processing function that interpolates pixels to said image data without affecting the gradation of the tones of the image (B spline interpolating operation means 32 of Fig. 5, col. 21, lines 27-31); a first function of determining a blending ratio that appraises the attribute of the image, based on reference pixels around a pixel of target of interpolation and determines a blending ratio between pixel interpolations generated by said first interpolation processing and those generated by said second interpolation processing, based on the appraised attribute (col. 21, lines 34-50); a function of image data blending that blends the image data of interpolations generated by said first interpolation processing function and the corresponding data generated by said second interpolation processing function at the determined blending ratio (col. 21, lines 57-58);

and an image data output function that outputs the thus blended data as interpolation-processed image data (col. 22, lines 5-8). Sakaida further discloses this embodiment as an image data interpolation method and an image data interpolation apparatus (col. 1, lines 7-8). Sakaida does not disclose expressly a likelihood of an image to be a natural picture. Westerink et al. disclose a relationship between the sharpness of an image and the likelihood of an image to be a natural picture (col. 3-4, lines 65-68, 1-6). Sakaida and Westerink et al. are combinable because they are from the same field of image processing. At the time of the invention, it would have been obvious to a person of ordinary skill in the art to determine a likelihood of an image to be a natural picture with the sharpness of an image. The motivation for doing so would have been to classify an image as either a natural image or not. Therefore, it would have been obvious to combine Westerink et al. with Sakaida to obtain the invention as in claims 1, 12, and 23.

Referring to claims 3, 14, and 25, Sakaida discloses the medium with the image data interpolation program recorded thereon according to claim 1, wherein: said first function of determining a blending ratio determines a blending ratio by means of an evaluation function that depends on the data of said reference pixels (col. 21, lines 34-50). Sakaida further discloses this embodiment as an image data interpolation method and an image data interpolation apparatus (col. 1, lines 7-8).

Referring to claims 4, 15, and 26, Sakaida discloses the medium with the image data interpolation program recorded thereon according to claim 1, wherein: said first function of determining a blending ratio determines a blending ratio, based on the

number of discrete tone values appearing in said reference pixels (col. 8, lines 59-64). Sakaida further discloses this embodiment as an image data interpolation method and an image data interpolation apparatus (col. 1, lines 7-8).

Referring to claims 7, 18, and 29, Sakaida discloses the medium with the image data interpolation program recorded thereon according to claim 4, wherein: the tone values of said reference pixels are the luminance values of said reference pixels (col. 25, lines 11-25). Sakaida further discloses this embodiment as an image data interpolation method and an image data interpolation apparatus (col. 1, lines 7-8).

6. Claims 2, 6, 13, 17, 24, 28, and 34 are rejected under 35 U.S.C. 103(a) as being unpatentable over Sakaida U.S. Patent No. 6,392,765 and Westerink et al. U.S. Patent 5,420,971, as applied to claims 1, 4, 12, 15, 23, and 26 above, and further in view of Sekine et al. U.S. Patent No. 5,754,710.

Referring to claims 2, 13, and 24, Sakaida discloses the interpolating program, method, and apparatus of claims 1, 12, and 23. Sakaida does not expressly disclose pattern matching or nearest neighbor interpolation. Sekine et al. disclose pattern matching interpolation (col. 5, lines 43-47), and nearest neighbor interpolation (col. 1, lines 15-27). At the time the invention was made, it would have been obvious to a person of ordinary skill in the art to implement the interpolation methods of pattern matching and nearest neighbor interpolation of Sekine into the interpolating system of Sakaida. One of ordinary skill in the art would have been motivated to do this to take advantage of the specific features of the interpolation processes disclosed by Sekine

which are utilized to improve speed or image sharpness over other interpolation processes.

Referring to claims 6, 17, and 28, Sakaida discloses the interpolating program, method, and apparatus of claims 4, 15, and 26. Sakaida discloses determining a blending ratio based on the number of discrete tones but does not expressly disclose determining the blending ratio based on the number of discrete tones. Sekine et al. disclose a first function of determining a blending ratio that increases the percentage of said first interpolation processing in direct proportion to the increase of the width of the range within which the tone values of said reference pixels fall when determining a blending ratio (col. 9, lines 48-58 and col. 10, lines 18-34). At the time the invention was made, it would have been obvious to a person of ordinary skill in the art to favor utilizing nearest neighbor interpolation in the interpolation system of Sakaida based on the width of range of tone values. One of ordinary skill in the art would have been motivated to do this to maintain luminance sharpness by utilizing nearest neighbor interpolation if the image appears to be a logo.

Referring to claim 34, Sakaida discloses an interpolating program, but does not expressly disclose pattern matching or nearest neighbor interpolation. Sekine et al. disclose pattern matching interpolation (col. 5, lines 43-47). While Sekine does not disclose expressly the specifics of pattern matching interpolation, Official Notice is taken that it was well known in the art and obvious that pattern matching interpolation recognizes patterns and determines the pixels based on those patterns (See MPEP 2144.03). The motivation for doing so would have been to take advantage of the

specific features of pattern matching interpolation which improves speed and image sharpness over other interpolation processes.

7. Claims 5, 16 and 27 are rejected under 35 U.S.C. 103(a) as being unpatentable over Sakaida U.S. Patent No. 6,392,765 and Westerink et al. U.S. Patent 5,420,971, as applied to claims 4, 15, and 26 above, and further in view of Dube et al. U.S. Patent No. 6,782,143.

Referring to claims 5, 16, and 17, Sakaida discloses the interpolating program, method, and apparatus of claims 4, 15, and 26. Sakaida discloses determining a blending ratio based on the number of discrete tones but does not expressly disclose selecting an interpolation method based on a predetermined threshold of discrete tones. Dube et al. disclose said first function of determining a blending ratio that gives a blending ratio so that only said first interpolation processing will be active when the number of discrete tone values appearing in said reference pixels is less than a predetermined threshold (col. 7, lines 44-59 and col. 16, lines 56-67). While the function of determining an interpolation method as disclosed by Dube et al. is based on gradient value, the method can be applied to determining a blending ratio with the color difference components of Sakaida. At the time the invention was made, it would have been obvious to a person of ordinary skill in the art to implement the function of determining an interpolation method based on a threshold as disclosed by Dube et al. into the interpolating system of Sakaida. One of ordinary skill in the art would have

been motivated to do this to allow choosing an interpolation method in the system of Sakaida that maintains tone sharpness or smoothness.

8. Claims 8-11, 19-22 and 30-33 are rejected under 35 U.S.C. 103(a) as being unpatentable over Sakaida U.S. Patent No. 6,392,765 and Westerink et al. U.S. Patent 5,420,971, as applied to claims 1, 12, and 23 above, and further in view of Kuwata et al. U.S. Patent No. 6,768,559.

Referring to claims 8, 19, and 30, Sakaida discloses the interpolating program, method, and apparatus of claims 1, 12, and 23. Sakaida discloses a blending ratio that determines between the pixels interpolated by said first interpolation processing and those interpolated by said second interpolation processing (col. 21, lines 57-58), and a function of print control processing that executes print control processing, based on the data of pixel interpolations blended at said blending ratio (Fig. 1, col. 15, lines 19-20). Sakaida does not expressly disclose acquiring print quality parameters and basing the determination of interpolation process on print quality parameters. Kuwata et al. disclose a function of print quality parameters acquisition that acquires print quality parameters, according to which a printer prints an image from said image data (Step 400 of Fig. 50, col. 36, lines 11-13) and basing the determination of interpolation process on print quality parameters (Step 410 of Fig. 50, col. 36, lines 13-29). At the time the invention was made, it would have been obvious to a person of ordinary skill in the art to incorporate acquiring print quality parameters and basing the interpolation method from the acquired print quality parameters as disclosed by Kuwata et al. into the

system of Sakaida to determine the interpolating method utilized. One of ordinary skill in the art would have been motivated to do this to allow selecting the best interpolation method in the system of Sakaida according to printing speed or document quality.

Referring to claims 9, 20, and 31, Sakaida and Kuwata et al. disclose the interpolating program, method, and apparatus of claims 8, 19, and 30. Sakaida does not expressly disclose determining a blending ratio with an evaluation function based on the print quality parameters. Kuwata et al. disclose an evaluation function that depends on the print quality parameters acquired (Step 410 of Fig. 50, col. 36, lines 13-29). At the time the invention was made, it would have been obvious to a person of ordinary skill in the art to incorporate evaluating print quality parameters as disclosed by Kuwata et al. into the system of Sakaida to determine the interpolating method utilized. One of ordinary skill in the art would have been motivated to do this to allow selecting the best interpolation method in the system of Sakaida according to printing speed or document quality.

Referring to claims 10, 21, and 32, Sakaida and Kuwata et al. disclose the interpolating program, method, and apparatus of claims 8, 19, and 30. Sakaida discloses setting higher percentage of an interpolation processing when determining a blending ratio according to a parameter (col. 21, lines 34-50), but does not expressly disclose favoring an interpolation method if the print quality parameters indicate a higher print quality. Kuwata et al. disclose utilizing print quality parameters acquired that indicate higher print quality for selecting an interpolation method (Step 410 of Fig. 50, col. 36, lines 13-29). At the time the invention was made, it would have been obvious to

a person of ordinary skill in the art to incorporate accessing print quality parameters as disclosed by Kuwata et al. into the system of Sakaida and favoring an interpolating method if there is indicated a higher print quality. One of ordinary skill in the art would have been motivated to do this to allow selecting the best interpolation method in the system of Sakaida according to document quality.

Referring to claims 11, 22, and 33, Sakaida and Kuwata et al. disclose the interpolating program, method, and apparatus of claims 8, 19, and 30. Sakaida discloses inhibiting an interpolation processing according to a parameter (col. 21, lines 34-50), but does not expressly disclose the further limitations of claims 11, 22, and 33. Kuwata et al. disclose utilizing print quality parameters acquired that indicate higher print quality for selecting an interpolation method (Step 410 of Fig. 50, col. 36, lines 13-29).

Conclusion

9. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Athitsos et al., Distinguishing Photographs and Graphics on the World Wide Web, Proc. IEEE Workshop on Content-Based Access of Image and Video Libraries, June 20, 1997, pp. 10-17.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Peter K. Huntsinger whose telephone number is (571)272-7435. The examiner can normally be reached on Monday - Friday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, David Moore can be reached on (571)272-7437. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

PKH

DOUGLAS Q. TRAN
PRIMARY EXAMINER